

CITY OF

COLUMBUS, INDIANA

TYPICAL CONSTRUCTION GUIDELINES AND DETAILS

ADOPTED BY RESOLUTION NO. 7, 2014
EFFECTIVE FOR ALL WORK ON OR AFTER JANUARY 1, 2015

CITY OFFICIALS

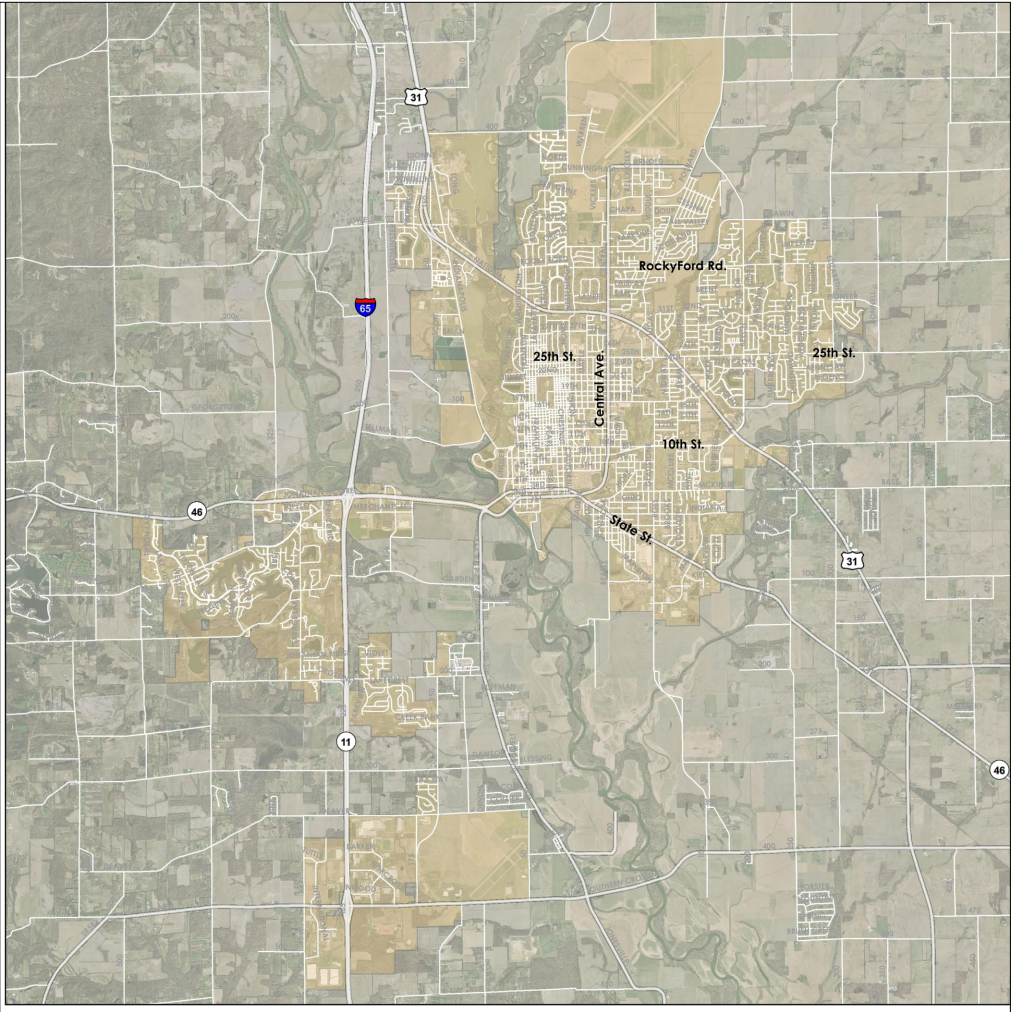
KRISTEN BROWN, Mayor
LUANN WELMER, Clerk-Treasurer
JEFF LOGSTON, City Attorney
BETH FIZEL, P.E. City Engineer

BOARD OF PUBLIC WORKS AND SAFETY

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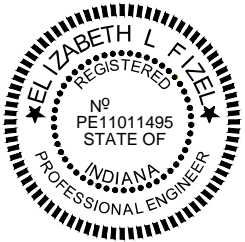
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DWN BY: AJB		
REVISIONS	DATE	BY
	12/23/2014	
SCALE: N.T.S.		

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:	CERT.	SHEET:	OF:
TYPICAL CONSTRUCTION GUIDELINES AND DETAILS		JOB No.	DRG. No.
	FILE:		

PAVEMENT CONSTRUCTION NOTES

1. INSTALLATION OF OR PROVISIONS FOR THE INSTALLATION OF ALL UNDERGROUND UTILITIES, INCLUDING SERVICE LATERALS, TO BE PLACED UNDER THE PAVEMENTS SHALL BE ESTABLISHED PRIOR TO THE CONSTRUCTION OF THE PAVEMENTS.

2. ALL PAVEMENT, CURBS, SIDEWALKS, RAMPS, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATIONS AND IN CLOSE CONFORMANCE WITH THE LINES, GRADES, THICKNESSES AND TYPICAL CROSS SECTIONS SHOWN ON THE PLANS. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH DESIGNATED SECTIONS OF THE INDIANA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS", LATEST EDITION.

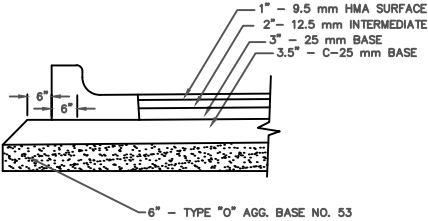
3. SUBBASE AND SUB GRADE FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D698.

4. ALL PORTLAND CEMENT CONCRETE PAVEMENT STREETS SHALL HAVE JOINT MAINTENANCE CONDUCTED BEFORE THE CITY ACCEPTS OWNERSHIP OF STREET (I.E. CRACK SEAL OR OTHER APPROVED MEASURE) WITHIN THE MAINTENANCE PERIOD.
5. WHEREVER RIGID PAVEMENT IS TO BE USED THE CONTRACTOR SHALL SUBMIT A DETAILED PAVING PLAN TO THE CITY ENGINEER. THE PAVING PLAN SHALL SHOW THE LOCATION AND TYPE OF JOINTING TO BE USED IN THE CONSTRUCTION. THE LOCATION AND TYPE OF JOINTING SHALL BE IN ACCORDANCE WITH THE CITY STANDARDS AND GUIDELINES.

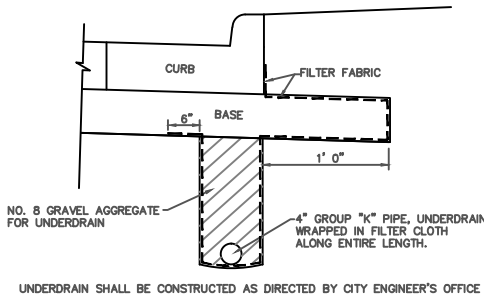
6. WHENEVER SUB GRADE STABILIZATION IS TO BE USED THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN DETAILING THE APPLICATION METHOD. THE PLAN MUST COMPLY WITH THE STATE OF INDIANA ENVIRONMENTAL REGULATIONS AND STANDARDS AND BE APPROVED BY THE CITY ENGINEER'S OFFICE.

7. RECYCLED CONCRETE MAY BE USED AS # 53 AGG. BASE ON A CASE BY CASE BASIS UPON PRIOR WRITTEN APPROVAL OF THE CITY.

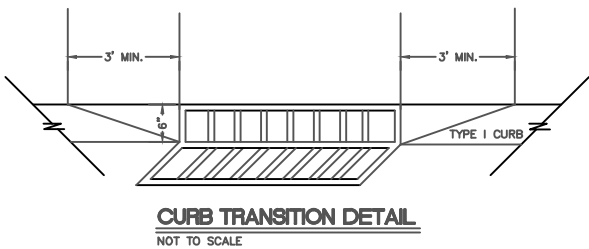
8. WHEREVER PROPRIETARY EQUIPMENT IS SPECIFIED, "OR APPROVED EQUAL" IS IMPLIED. ALL PROPOSALS FOR SUBSTITUTION SHALL BE SUBMITTED TO THE CITY IN WRITING FOR THEIR APPROVAL.



(INTERSECTION OF LOCAL, PLACE OR COLLECTOR WITH ARTERIAL)
ARTERIAL APPROACH PAVEMENT SECTION
NOT TO SCALE



UNDERDRAIN DETAIL
NOT TO SCALE



CURB TRANSITION DETAIL
NOT TO SCALE

QUALITY CONTROL REQUIREMENTS

1. ALL TESTING SHALL BE IN ACCORDANCE WITH THE LATEST INDOT STANDARD SPECIFICATIONS. ALL TESTS WHERE PRACTICABLE SHALL BE WITNESSED BY THE CITY. CONTRACTOR SHALL COORDINATE TESTING SCHEDULE WITH THE CITY ENGINEER'S OFFICE. ALL TEST RESULTS SHALL BE SUBMITTED TO THE CITY ENGINEER'S OFFICE WITHIN 48 HOURS OF THE COMPLETION OF EACH TEST AND PRIOR TO PLACING ANY MATERIAL ON THE SUBBASE/SUBGRADE. THE FREQUENCY OF TESTING WHERE SHOWN IS A MINIMUM. ADDITIONAL TESTING MAY BE REQUIRED AT THE DIRECTION OF THE PUBLIC WORKS INSPECTOR.

2. THE DEVELOPER/CONTRACTOR SHALL RETAIN AN INDEPENDENT TESTING FIRM (UNLESS OTHERWISE NOTED) TO PERFORM THE FOLLOWING TESTING:
- A. SUBGRADE:

1. COMPACTION (FILL SECTIONS): 1 TEST PER LANE PER 500 LF OF SINGLE LANE WIDTH.

2. ADEQUACY OF SUBGRADES SHALL BE DETERMINED SOLELY BY THE PUBLIC WORKS INSPECTOR. A PROOFROLL SHALL BE PERFORMED ON ALL STREET SUB GRADE PRIOR TO PLACING STONE AND INSTALLING CURB. SUBGRADE SHALL MEET INDOT SPECIFICATION SECTION 207, EXCEPT THAT ONLY THE TOP 6" OF SUBGRADE SHALL BE TESTED FOR 100% STANDARD COMPACTION. PROOFROLLING THAT COMPLIES WITH INDOT SPECIFICATION 203.26 IS ALSO REQUIRED, EXCEPT THAT PROOFROLLING MAY ALSO BE ACCOMPLISHED USING A FULLY LOADED TANDEM OR TRI-AXLE DUMP TRUCK IN LIEU OF THE SPECIFIED RUBBER TIRE ROLLER. ROLLER MARKS LESS THAN 1/2" ARE ACCEPTABLE, AS ARE DEFLECTIONS LESS THAN 1/2" OVER THE LENGTH OF THE ROLLER OR TRUCK. IF THE SUBGRADE DOES NOT PASS THESE SPECIFICATIONS, THEN SUBGRADE TREATMENTS, INCLUDING CHEMICAL MODIFICATION PERFORMED ACCORDING TO INDOT SPECIFICATIONS 207 AND 215 MAY BE DONE IN LIEU OF THE ABOVE DENSITY AND PROOFROLL SPECIFICATIONS.
- B. AGGREGATE SUBBASE:

1. GRADUATION - 1 TEST PER 1000 TONS OR 1 PER WEEK

2. COMPACTION - 1 TEST PER 500 LF OF SINGLE LANE WIDTH
- C. BITUMINOUS MATERIAL (BASE, INTERMEDIATE AND SURFACE):

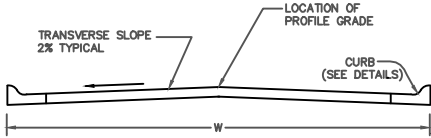
1. ASPHALT EXTRACTION - 1 TEST PER EACH TYPE OF MATERIAL USED PER JOB TEST TO INCLUDE GRADATION, ASPHALT CONTENT, CRUSHED PARTICLE DETERMINATION AND DELETERIOUS DETERMINATION. TEST SHALL BE CERTIFIED PER INDOT CERTIFICATION REQUIREMENTS.

2. DENSITY- THE TARGET DENSITY SHALL BE DETERMINED FROM A TEST STRIP CONSTRUCTED PER INDOT SPECIFICATIONS. THE TARGET DENSITY SHALL NOT BE LESS THAN 98% OF THE UNIT WEIGHT AT THE OPTIMUM BINDER CONTENT NDES AS DETERMINED BY THE MIX DESIGN. THE DENSITY OF EACH SUBLOT WILL BE THE AVERAGE OF FIVE TESTS. A SUBLOT SHALL BE 1000 LF OF SINGLE LANE WIDTH. BREAKDOWN ROLLER SHALL BE MINIMUM 10 TON OR APPROVED VIBRATORY.
- D. CONCRETE FOR CURBING AND DRIVEWAYS:

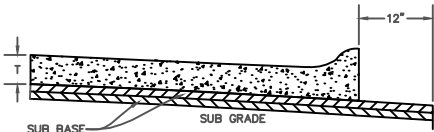
1. AIR AND SLUMP - 1 TEST PER DAY FOR POURS OVER 20 CY OR MINIMUM 1 PER WEEK.

2. COMPRESSIVE STRENGTH TESTS - AN ADEQUATE NUMBER OF CONCRETE TEST CYLINDERS SHOULD BE TAKEN TO ENSURE THAT PSI REQUIREMENTS OF THE CONCRETE SECTION ARE MET. A MINIMUM OF ONE SET OF TEST CYLINDERS PER WEEK SHALL PASS THESE REQUIREMENTS.

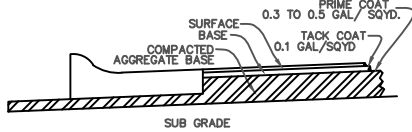
3. CONCRETE STRENGTH SHALL BE A MINIMUM 4000 PSI BEFORE OPEN TO TRAFFIC.
- E. CONCRETE FOR PAVEMENT - FREQUENCY OF TESTS SHALL BE IN ACCORDANCE WITH THE INDOT FREQUENCY TESTING MANUAL AS SET OUT IN THE SECTION TITLED "CONCRETE PAVEMENT AND STRUCTURE MATERIAL".



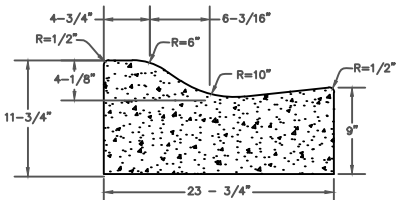
STANDARD STREET CROSS-SECTION
NOT TO SCALE



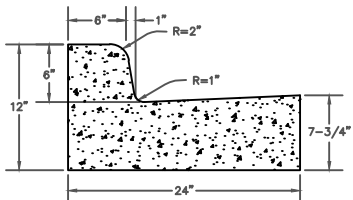
CONCRETE RIGID PAVEMENT SECTION
NOT TO SCALE



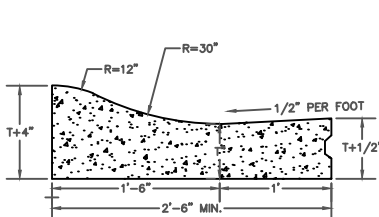
ASPHALT PAVEMENT SECTION
NOT TO SCALE
BASE TO BE CONSTRUCTED PRIOR TO CONSTRUCTION OF CURB AND GUTTER



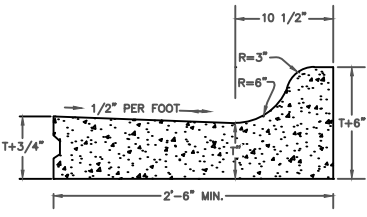
2' ROLL CURB AND GUTTER



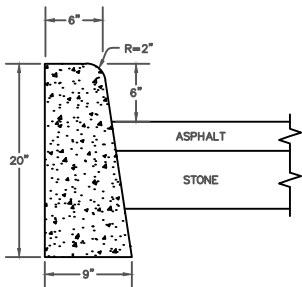
2' CONCRETE CURB AND GUTTER



INTEGRAL CONCRETE CURB
TYPE I

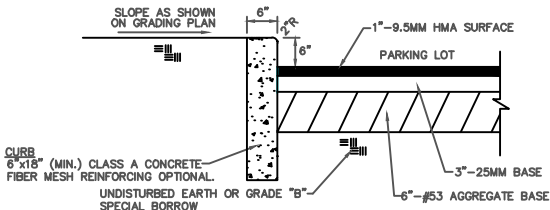


INTEGRAL CONCRETE CURB
TYPE II

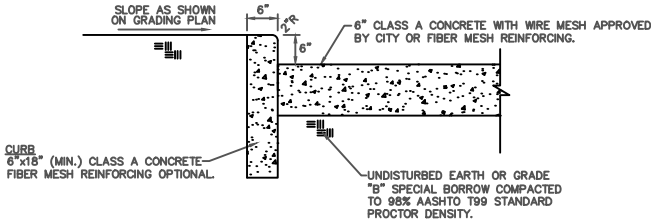


CONCRETE VERTICAL CURB

CURB SECTIONS
NOT TO SCALE



TYPICAL PARKING LOT AND CURB SECTION - ASPHALT
NOT TO SCALE



TYPICAL PARKING LOT AND CURB SECTION - CONCRETE
NOT TO SCALE



DWN BY: AJB

DATE: 12/23/2014

SCALE: N.T.S.

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

PAVEMENT AND CURB
TYPICAL SECTIONS AND NOTES

CERT.

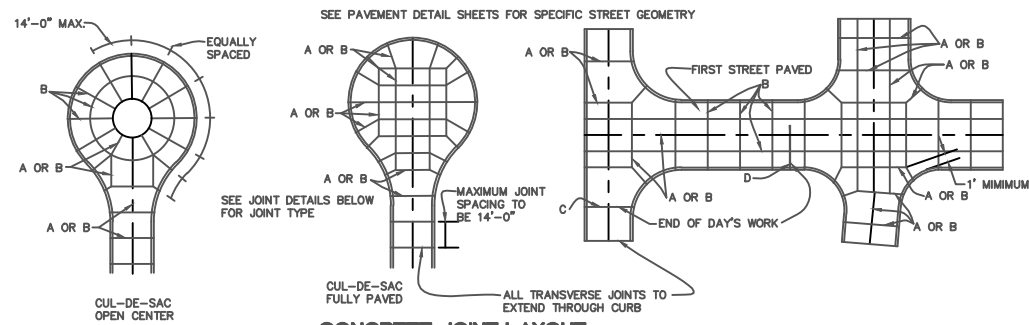
SHEET:

OF:

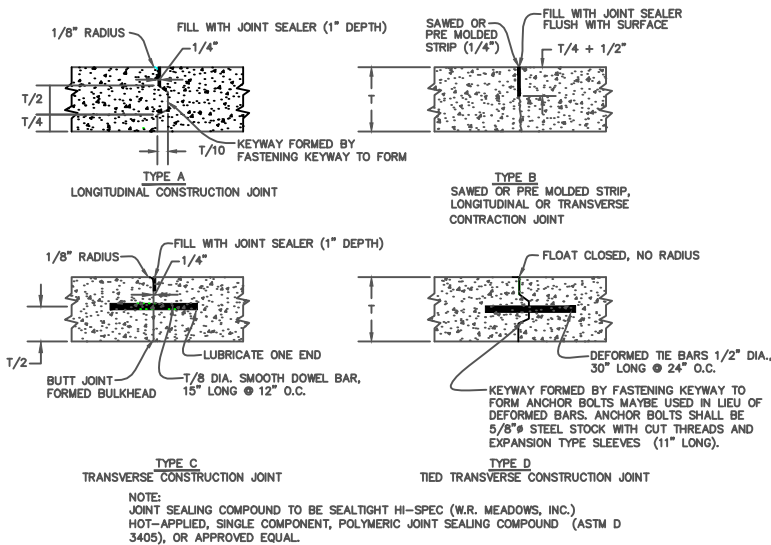
JOB No.

DRG. No.

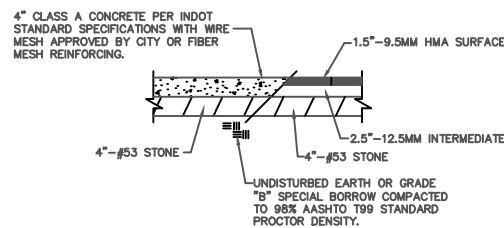
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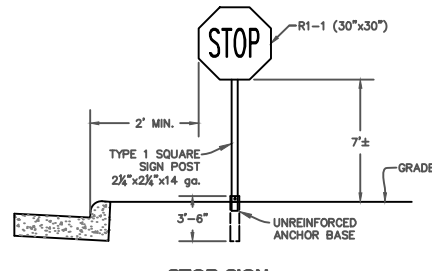
CONCRETE JOINT LAYOUT
NOT TO SCALE



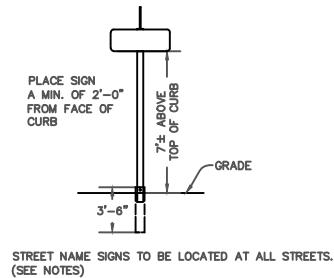
NEW CONSTRUCTION - CONCRETE JOINT DETAILS
NOT TO SCALE



TYPICAL PEDESTRIAN TRAIL SECTION
NOT TO SCALE



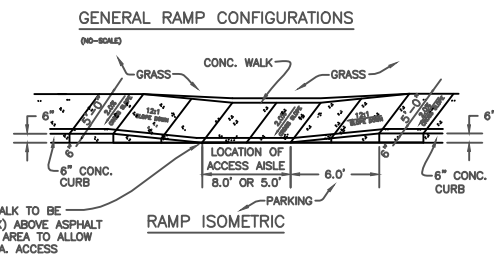
STOP SIGN



STREET NAME SIGN

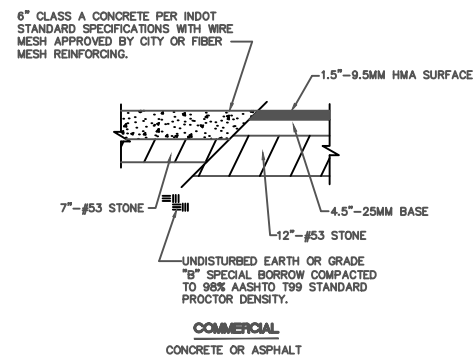
TRAFFIC CONTROL AND SIGN NOTES

1. THE CONTRACTOR/DEVELOPER SHALL PROVIDE AND INSTALL ALL STREET NAME AND ROAD SIGNS PER CURRENT INDOT STANDARDS AND CITY OF COLUMBUS GUIDELINES AND DETAILS. ALL TRAFFIC CONTROL DEVICES SHALL COMPLY WITH THE CURRENT INDOTCD.
2. MATERIALS SHALL BE FREE OF BURRS, PITS, AND BLEMISHES AND SHALL PRESENT A SMOOTH CLEAN SURFACE.
3. SIGN BLANKS SHALL MEET INDOT SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
4. ALL STREET SIGNS SHALL HAVE GREEN BACKGROUND WITH WHITE LETTERS/NUMBERS ON EXTRUDED ALUMINUM BLADES.
5. THE STREET NAME LETTERS TO BE HIGH INTENSITY PRISMATIC: 9" BLADE WITH 6" INITIAL UPPER-CASE LETTER/NUMBER FOLLOWED BY 4.5" LOWER-CASE LETTERS.
6. STOP SIGNS SHALL BE 30" DIAMOND GRADE OR HIGH INTENSITY PRISMATIC.
7. SIGN BOLTS TO BE PER INDOT STANDARD SPECIFICATIONS. BOLTS ARE TO BE THEFT PROOF.
8. SPEED LIMIT SIGNS SHALL BE 24" X 30" PRISMATIC HIGH INTENSITY.
9. SIGN POST SHALL BE DRIVEN INTO THE GROUND. NO EXCAVATION SHALL BE DONE TO PLACE SIGNS.

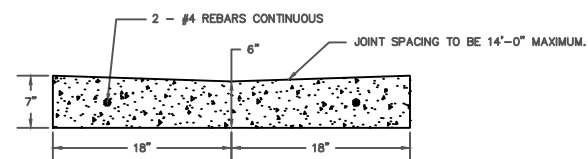
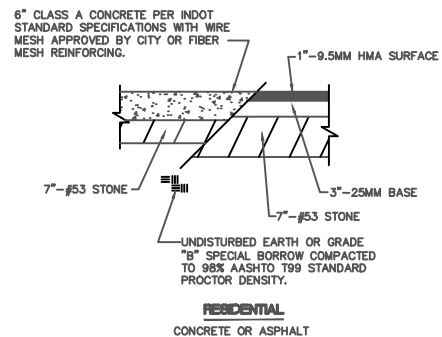


1. ALL RAMPS SHALL CONFORM TO THE PROPOSED ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY.
2. DETECTABLE WARNING SURFACES TO BE EITHER CAST IRON OR FIBERGLASS.
3. CURB AT LANDING OF RAMP SHALL NOT HAVE A VISIBLE LIP. IT SHALL SLANT SO AS TO PROMOTE POSITIVE DRAINAGE.
4. ALL RAMPS SHALL BE FIELD VERIFIED BY A MEMBER OF THE CITY ENGINEERS OFFICE BEFORE THE PLACEMENT OF CONCRETE.

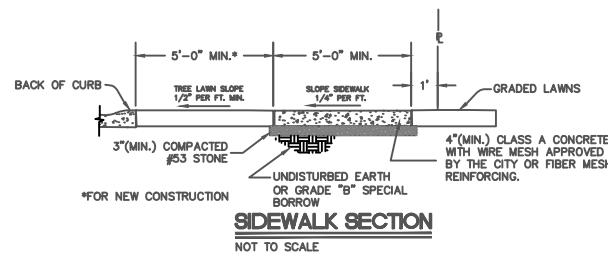
CONSTRUCTION AND FINISH TO BE PER CURRENT ADA REQUIREMENTS.
STANDARD HANDICAP RAMP DETAILS
NOT TO SCALE



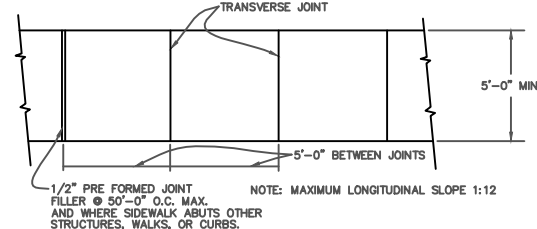
MINIMUM REQUIRED APPROACH SECTION FOR PRIVATE DRIVES
NOT TO SCALE WITHIN RIGHT OF WAY



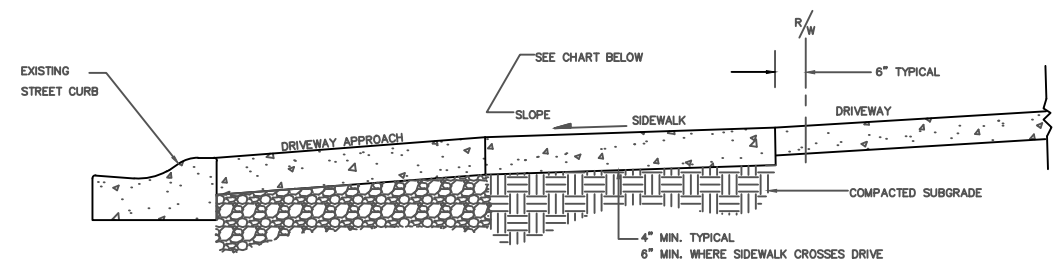
CONCRETE GUTTER - STREET
NOT TO SCALE



SIDEWALK SECTION
NOT TO SCALE



SIDEWALK PLAN
NOT TO SCALE



SIDEWALK VERTICAL DROP			
WIDTH	4'	5'	8'
2% MAX.	15"	1 1/8"	1 7/8"
.5% MIN.	1"	5/8"	2"

TYPICAL DRIVEWAY SECTION DETAIL
(TYPE II OR TYPE III CURBS)
NOT TO SCALE



DWN BY: AJB

REVISIONS	DATE	BY
01	1/6/15	AJB

DATE: 12/23/2014

SCALE: N.T.S.

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

CONCRETE PAVEMENT, SIDEWALK, DRIVEWAY
TYPICAL SECTIONS AND NOTES

CERT.

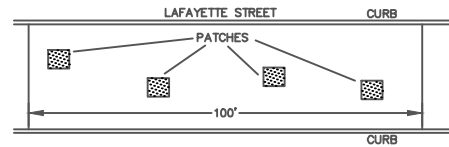
FILE:

SHEET:

JOB No.

OF:

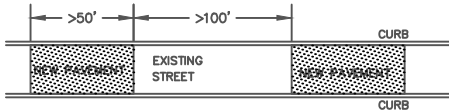
DRG. No.



MULTIPLE CUTS SHALL BE DEFINED AS CITY STREET OR ALLEY, ASPHALT OR CONCRETE, THAT HAVE THE FOLLOWING CONDITIONS:

1. FOUR (4) OR MORE PATCHES PER 100 LINEAR FEET OF ROADWAY WITHIN A ONE (1) YEAR PERIOD OF TIME, AND
2. AREA CUT IS GREATER THAN 64 S.F. IN 100 LINEAR FEET OF ROADWAY WITHIN A ONE (1) YEAR PERIOD OF TIME.

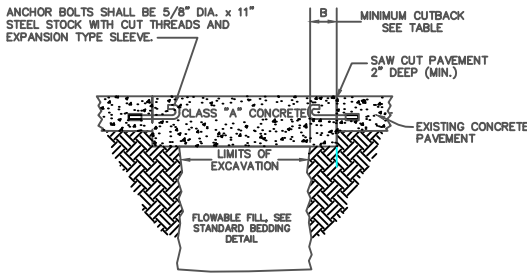
MULTIPLE CUTS TO BE RESTORED AS FOLLOWS:



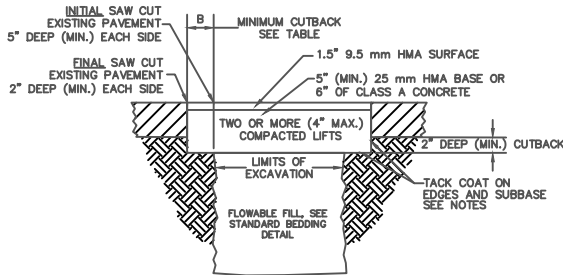
1. NEW PAVEMENT AREAS SHALL NOT HAVE GAPS OF LESS THAN 100 FEET. MINIMUM LENGTH OF NEW PAVEMENT SHALL BE 50 FEET.

2. THE CITY ENGINEER SHALL HAVE THE AUTHORITY TO NEGOTIATE A PAYMENT FROM THE UTILITY COMPANY IN LIEU OF RESURFACING. THE PAYMENT SHALL BE BASED UPON THE UNIT PRICE FOR ASPHALT FROM THE CITY'S MOST RECENT RESURFACE CONTRACT AND THE AREA THAT WOULD HAVE TO BE RESURFACED ACCORDING TO THIS STANDARD. THE PAYMENT SHALL BE PRORATED ACCORDING TO THE CITY'S RESURFACING SCHEDULE AT A RATE OF 10% PER YEAR. FOR EXAMPLE, IF THE STREET IS SCHEDULED TO BE RESURFACED IN ONE YEAR, ONLY 10% WILL BE CHARGED, IN 2 YEARS ONLY 20% ETC. THIS PAYMENT OPTION SHALL NOT APPLY TO RECENTLY RESURFACED STREETS.

CITY OF COLUMBUS METHOD FOR REPLACING MULTIPLE CUTS

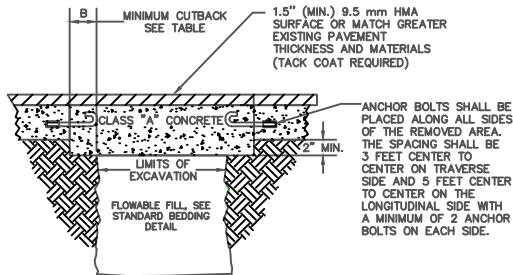


CONCRETE PAVEMENT REPAIR

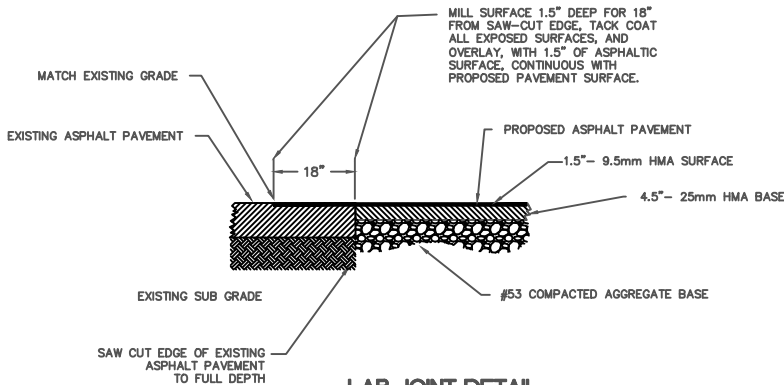


ASPHALT PAVEMENT REPAIR

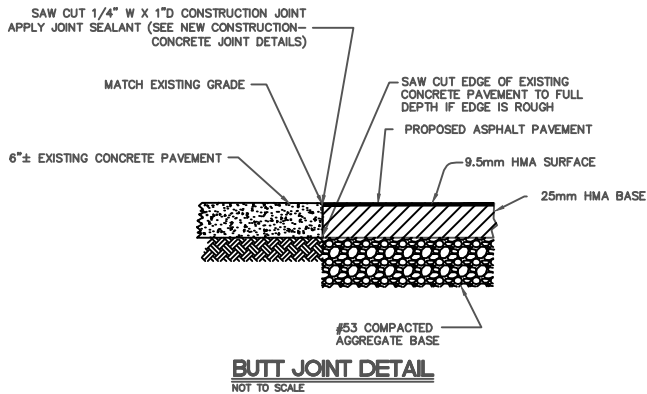
FINAL CUTBACK TABLE	
B	TRENCH WIDTH
6"	3'-0" OR LESS
9"	3'-1" TO 5'-0"
12"	5'-1" OR GREATER



ASPHALT OVER CONCRETE
PAVEMENT REPAIR



LAP JOINT DETAIL
NOT TO SCALE



BUTT JOINT DETAIL
NOT TO SCALE

PAVEMENT RESTORATION NOTES

GENERAL:

1. MAINTENANCE OF ANY STREET RESTORATION OR REPAIR SHALL BE THE RESPONSIBILITY OF THE INDIVIDUAL UTILITY OR DEVELOPER AUTHORIZED TO MAKE SUCH REPAIR UNTIL THE STREET HAS BEEN RESURFACED.

PERMANENT PAVEMENT RESTORATION:

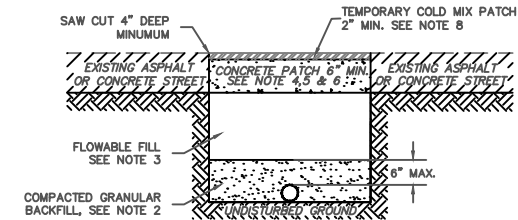
1. THIS STREET REPAIR PROCEDURE SHALL BE USED FROM APRIL 15th UNTIL NOVEMBER 15th OR AS LONG AS H.M.A. IS AVAILABLE.
2. BED PIPE OR CONDUIT WITH APPROVED COMPACTED GRANULAR MATERIAL . (SAND, PIT RUN, PR B-BORROW)
3. FLOWABLE FILL SHALL HAVE A COMPRESSIVE STRENGTH OF 50 TO 150 P.S.I. FLOWABLE FILL SHALL BE SUPPLIED BY A PROVIDER APPROVED BY THE CITY ENGINEER. APPROVAL SHALL BE BASED ON INDOT PREQUALIFICATION AND SUBMITTAL OF AN ACCEPTABLE MIX DESIGN(S).
4. ASPHALT STREETS: ASPHALT PATCH SHALL BE 5D BASE OR EQUAL, 6" MINIMUM DEPTH OR MATCH EXISTING. CONCRETE PATCH SHALL BE 6" MINIMUM DEPTH OR MATCH EXISTING, HIGH STRENGTH INDOT CLASS "C", WITH 2% CALCIUM AND SHALL BE PLACED WITHIN 24 HOURS.
5. CONCRETE STREETS: CONCRETE PATCH SHALL BE 6" MINIMUM DEPTH OR MATCH EXISTING, HIGH STRENGTH INDOT CLASS "C", WITH 2% CALCIUM, FLUSH WITH EXISTING SURFACE. BROOM FINISHED AT RIGHT ANGLES TO TRAFFIC FLOW AND SHALL BE PLACED WITHIN 24 HOURS.
6. PLACE 1.5" PATCH OF #11 SURFACE H.M.A. (WITHIN 24 HOURS) FLUSH WITH EXISTING SURFACE. SURFACE OF CONCRETE OR ASPHALT PATCH AND EDGES OF EXISTING ASPHALT SHALL BE TACK COATED BEFORE PLACING H.M.A. PATCH.
7. IF MORE THAN ONE CUT IS MADE ON A CITY STREET, AND THE DISTANCE BETWEEN THE TWO IS 5'-0" OR LESS, THE CONTRACTOR OR PERSONS MAKING THE REPAIR WILL BE REQUIRED TO REMOVE THE SURFACE BETWEEN THE CUTS AND MAKE ONE REPAIR.
8. CONTRACTOR SHALL NOTIFY THE CITY ENGINEER'S OFFICE AT (812) 376-2540, BEFORE PLACING THE PATCH.
9. ALL OVERCUTTING AND ENTIRE PERIMETER OF FINAL REPAIR TO BE CLEANED AND SEALED WITH ASPHALT CRACK SEALER.
10. FLOWABLE FILL IS NOT TO BE USED AS A TEMPORARY DRIVING SURFACE EXCEPT FOR AN EMERGENCY AND THEN FOR A PERIOD NOT TO EXCEED 24 HOURS.

TEMPORARY PAVEMENT REPAIR:

1. THIS STREET REPAIR PROCEDURE SHALL BE USED FROM NOVEMBER 16th UNTIL APRIL 14th OR AS LONG AS H.M.A IS NOT AVAILABLE.
2. BED PIPE OR CONDUIT WITH APPROVED COMPACTED GRANULAR MATERIAL. (SAND, PIT RUN OR B-BORROW).
3. FLOWABLE FILL SHALL HAVE A COMPRESSIVE STRENGTH OF 50 TO 150 P.S.I. FLOWABLE FILL SHALL BE SUPPLIED BY A PROVIDER APPROVED BY THE CITY ENGINEER. APPROVAL SHALL BE BASED ON INDOT PREQUALIFICATION AND SUBMITTAL OF ACCEPTABLE MIX DESIGN(S).
4. FLOWABLE FILL IS NOT TO BE USED AS A TEMPORARY DRIVING SURFACE EXCEPT FOR AN EMERGENCY REPAIR AND THEN FOR A PERIOD NOT TO EXCEED 24 HOURS.
5. ASPHALT STREETS: CONCRETE PATCH SHALL BE 6" MIN. DEPTH OR MATCH EXISTING, PLACED WITHIN 24 HOURS.
6. CONCRETE STREETS: CONCRETE PATCH SHALL BE 6" MINIMUM DEPTH OR MATCH EXISTING, FLUSH WITH EXISTING SURFACE AND BROOM FINISHED AT RIGHT ANGLES TO TRAFFIC FLOW, PLACED WITHIN 24 HOURS.
7. ALL CONCRETE SHALL BE INDOT CLASS "C", WITH 2% CALCIUM AND SHALL BE COVERED AND INSULATED FOR 4 HOURS PRIOR TO BEING OPENED TO TRAFFIC.
8. PLACE TEMPORARY 2" PATCH OF COLD MIX FLUSH WITH EXISTING SURFACE WITHIN 24 HOURS. TEMPORARY PATCH SHALL BE REMOVED AND REPLACED WITH 2" OF #11 H.M.A. SURFACE AS SOON AS H.M.A. BECOMES AVAILABLE. SURFACE OF CONCRETE AND EDGES OF EXISTING ASPHALT SHALL BE TACK COATED BEFORE PLACING H.M.A.
9. IF MORE THAN ONE CUT IS MADE ON A CITY STREET, AND THE DISTANCE BETWEEN THE TWO IS 5'-0" OR LESS, THE CONTRACTOR OR PERSONS MAKING THE REPAIR WILL BE REQUIRED TO REMOVE THE SURFACE BETWEEN THE CUTS AND MAKE ONE REPAIR.
10. CONTRACTORS SHALL NOTIFY THE CITY ENGINEER'S OFFICE AT (812) 376-2540, BEFORE PLACING CONCRETE OR ASPHALT PATCH.
11. ALL OVERCUTTING AND ENTIRE PERIMETER OF FINAL REPAIR TO BE CLEANED AND SEALED WITH ASPHALT CRACK SEALER.
12. FINAL REPAIRS SHALL BE COMPLETED NO LATER THAN MAY 1st.

SPECIAL SURFACE STREETS:

1. ANY SPECIAL SURFACES SHALL BE RESTORED IN-KIND. FOR EXAMPLE. BRICK SURFACE STREETS REQUIRE ALL PAVEMENT CUTS TO BE RESTORED WITH BRICK. COBBLESTONE SURFACE STREETS MUST BE RESTORED WITH COBBLESTONE. PERMIT HOLDER SHALL SALVAGE AS MUCH OF THE EXISTING BRICK OR COBBLESTONE AS POSSIBLE FOR REUSE IN THE RESTORATION AND SHALL SUPPLY ANY REMAINING MATERIAL REQUIRED FOR THE RESTORATION.



TEMPORARY PAVEMENT REPAIR

NOT TO SCALE



DWN BY: AJB

REVISIONS	DATE	BY

DATE: 12/23/2014

SCALE: N.T.S.

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

PAVEMENT REPAIR AND RESTORATION
TYPICAL SECTIONS AND NOTES

CERT.

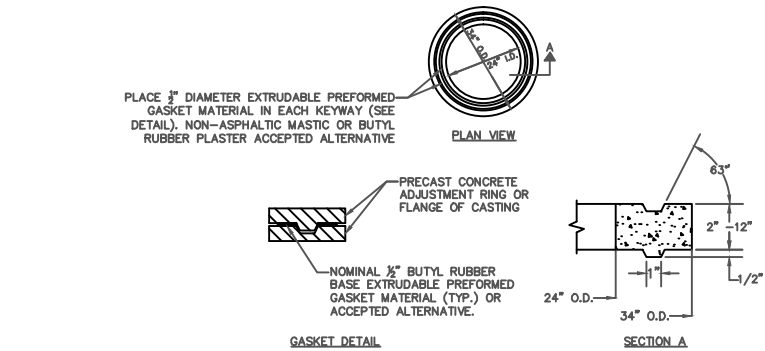
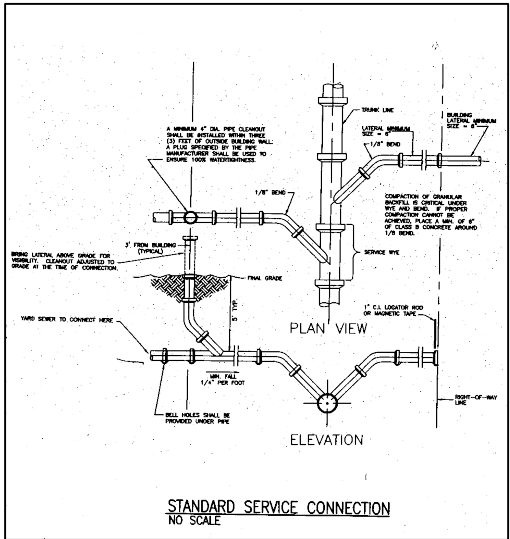
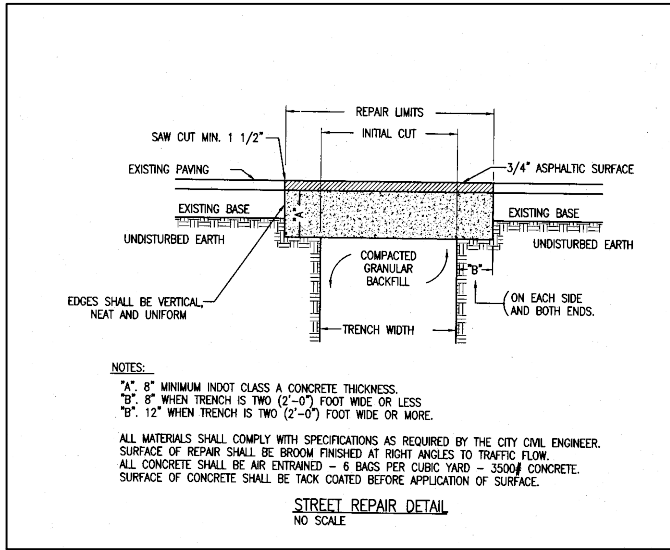
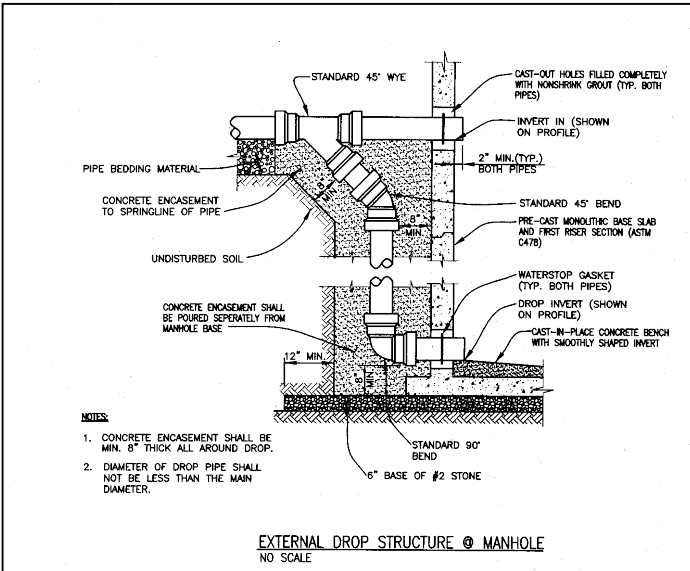
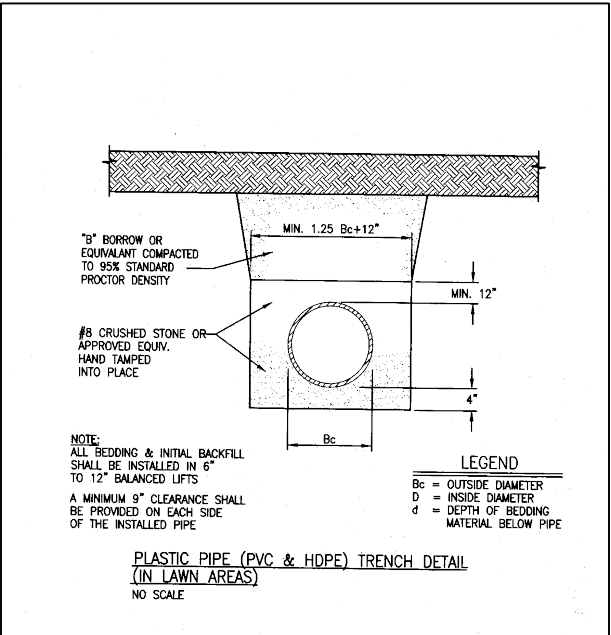
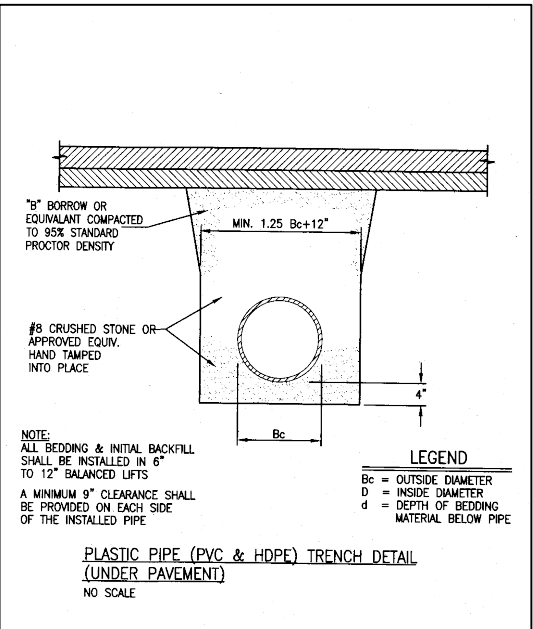
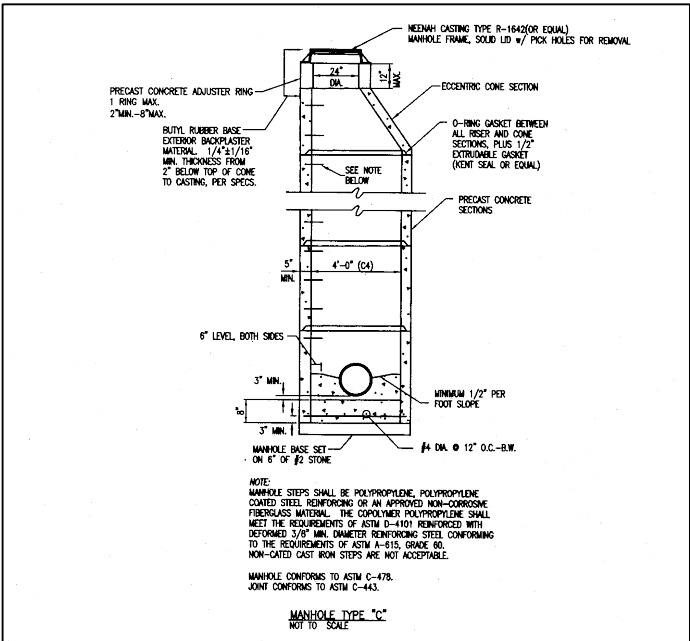
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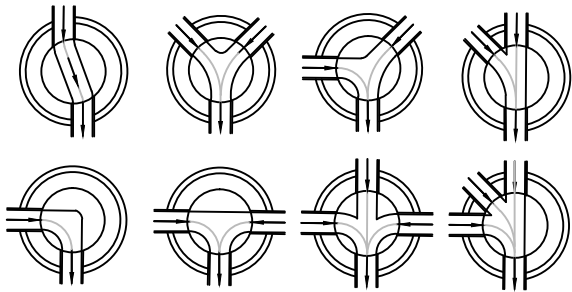
JOB No.

DRG. No.

FILE:



PRECAST CONCRETE ADJUSTING RING DETAIL
NOT TO SCALE



SANITARY SEWER NOTES:

- ALL SANITARY SEWER PIPE IS TO BE SDR 35 PVC PRESSURE SEWER PIPE WITH COMPRESSION FITTINGS PER ASTM D-3034, AND SHALL BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
- SEWERS SHALL BE LAID AT LEAST (10) FEET, HORIZONTALLY, FROM ANY WATER MAIN.
- CROSSINGS OF BURIED SEWERS AND WATER LINES SHALL BE AVOIDED AS MUCH AS POSSIBLE, HOWEVER WHERE CROSSINGS ARE NECESSARY, A MINIMUM OF 18 INCHES VERTICAL CLEARANCE SHALL BE MAINTAINED (MEASURED FROM THE BOTTOM OF THE UPPER PIPE TO THE TOP OF THE LOWER PIPE), PREFERABLY WITH THE WATER MAIN ABOVE THE SEWER.
- WHEN IT IS IMPOSSIBLE TO MAINTAIN PROPER HORIZONTAL AND VERTICAL SEPERATION, THE SEWER SHALL BE CONSTRUCTED OF WATERWORKS GRADE DUCTILE IRON PIPE WITH MECHANICAL JOINTS OR SDR 26 PVC PRESSURE SEWER PIPE IN ACCORDANCE WITH ASTM D-3034 WITH COMPRESSION FITTINGS, AND SHALL BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
- ALL STUBS AND INDIVIDUAL SERVICE LINES SHALL BE 6" PIPE AS NOTED
- CONTRACTOR IS TO PROVIDE A MEANS OF ACCESS TO ALL RESIDENCES AND BUSINESSES DURING CONSTRUCTION.
- CONTRACTOR IS TO PROVIDE ADEQUATE EROSION CONTROL DURING CONSTRUCTION. ANY DISTURBED AREAS ARE TO BE RESEEDDED WITH IN 7 DAYS OF FINISHED GRADING.
- IT SHALL BE THE CONTRACTORS RESPONSIBILITY FOR COMPLIANCE WITH THE REQUIREMENTS OF SECTION 15, 1990 OSHA EXCAVATION STANDARDS, 29 CFR 1928 SUBPART P.
- USE HEAVY DUTY NEENAH #R-1642, MANHOLE FRAME w/ PICK HOLES FOR REMOVAL (OR EQUAL)
- WHERE MANHOLES OCCUR IN FLOOD PLAN OR DITCH, USE WATERTIGHT CASTING AND LIDS. LOCATION AS SHOWN ON PLANS.
- WATERTIGHT MANHOLE CASTINGS SHALL BE FURNISHED WITH A ROUND RUBBER GASKET, CONCEALED WATERTIGHT PICK HOLES, AND BRONZE CAPSCREW.
- FOR MANHOLE IN PRESENT STREETS, COVERS SHALL MATCH EXISTING GRADE.
- ALL SLOPES TO BE FINISHED WITHIN 1" TO TOP OF CASTING.
- ALL JOINTS TO BE WATERTIGHT "O" RING TYPE PER A.S.T.M. SPECIFICATION C-443, LATEST EDITION.
- ALL PRECAST CONES AND BARRELS TO BE REINFORCED PER A.S.T.M. SPECIFICATION C-487, LATEST EDITION.
- MANHOLE STEPS TO BE STANDARD PLASTIC WITH STEEL REINFORCING.
- DROP MANHOLES SHALL BE PROVIDED FOR ANY SEWER ENTERING A MANHOLE AT AN ELEVATION OF 24" OR MORE ABOVE MANHOLE INVERT; DROP PIPES TO BE OF THE SAME MATERIAL AS THE SEWER MAIN.
- ALL WYES AND HOUSE SERVICE RUNS SHALL BE PLUGGED WITH PLUGS HAVING RESILIENT JOINT MATERIAL MATCHING THAT OF THE PIPE JOINTS.
- ROOF DRAINS, FOUNDATION DRAINS, OR ANY OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
- INSPECTION: PERIODIC OBSERVATION OF WORK IN PROGRESS MAY BE PROVIDED BY COLUMBUS UTILITIES OR THEIR DESIGNEE. THE SANITARY SEWER UTILITY SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO HIS STARTING WORK AND PRIOR TO RESTARTING WORK AFTER DELAYS OR SHUT-DOWNS.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE HEREON PLANS AND IN ACCORDANCE WITH ANY APPLICABLE FEDERAL, STATE, LOCAL CODES OR LAWS, AND COLUMBUS UTILITIES HANDBOOKS.

SUBSTITUTIONS:

CERTAIN ITEMS IN THESE PLANS ARE IDENTIFIED BY SPECIFIC MODEL OR ITEM NUMBERS AS SUPPLIED BY NAMED MANUFACTURERS. THE ITEMS ARE SO SPECIFIED BECAUSE THEY EXHIBIT A PERFORMANCE STANDARD REQUIRED BY THE SPECIFIC SITE CONDITIONS. THESE ITEMS MAY ONLY BE SUBSTITUTED IF THE CONTRACTOR MAKES WRITTEN REQUEST OF THE DESIGNER, STATING THE MANUFACTURER AND MODEL OR ITEM NUMBER OF THE REQUESTED REPLACEMENT OF THE SPECIFIED ITEM. SUBSTITUTION MAY OCCUR AFTER THE CONTRACTOR RECEIVES WRITTEN APPROVAL FROM BOTH THE DESIGNER AND ALL APPROVING AGENCIES.

DEFLECTION AND LEAKAGE TESTING

A DEFLECTION AND LEAKAGE TEST SHALL ON ALL SEWER PIPE INSTALLED DURING THE CONSTRUCTION OF THIS PROJECT IN ACCORDANCE WITH 327 IAC 3-6-19. A DEFLECTION TEST SHALL BE PERFORMED ON ALL FLEXIBLE PIPE FOLLOWING THE ELAPSE OF 30 DAYS AFTER THE PLACEMENT OF FINAL BACKFILL. NO PIPE SHALL EXCEED A DEFLECTION OF 5% OR GREATER. THE DIAMETER OF RIGID BALL OR MANDREL USED FOR A DEFLECTION TEST SHALL BE NO LESS THAN 95% OF THE BASE INSIDE DIAMETER OF THE PIPE TO BE TESTED DEPENDENT ON WHAT IS SPECIFIED IN THE CORRESPONDING ASTM STANDARD. THE TEST SHALL NOT BE PERFORMED WITH THE AID OF A MECHANICAL PULLING DEVICE.

ALL GRAVITY SEWER SHALL BE TESTED USING THE FOLLOWING LEAKAGE TESTS:

A HYDROSTATIC TEST SHALL BE PERFORMED WITH A MINIMUM OF 2 FEET OF POSITIVE HEAD. THE RATE OF EXFILTRATION OR INFILTRATION SHALL NOT EXCEED TWO HUNDRED GALLONS PER INCH OF PIPE DIAMETER PER LINEAR MILE PER DAY.

VACUUM TESTING

ALL SANITARY MANHOLES SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1244-93. ALL PIPES ENTERING THE MANHOLE SHALL BE PLUGGED. THE TEST HEAD SHALL BE PLACED AND THE SEAL INFLATED PER MANUFACTURER'S RECOMMENDATIONS. A VACUUM PUMP OF TEN INCHES OF MERCURY SHALL BE DRAWN AND THE VACUUM PUMP SHUT OFF. WITH THE VALVES CLOSED, THE TIME SHALL BE MEASURED FOR THE VACUUM TO DROP NINE INCHES. FOLLOWING ARE MINIMUM ALLOWABLE TEST TIMES FOR MANHOLE ACCEPTANCE AT THE SPECIFIED VACUUM DROP. (NUMBERS ARE PER ASTM C 1244-93 FOR 48" DIA. MANHOLE)

DEPTH (FEET)	TIME (SECONDS)
4	10
8	20
12	30
16	40
20	50
24	59



DWN BY:	AJB
DATE:	12/23/2014
SCALE:	N.T.S.

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

SANITARY SEWER
TYPICAL DETAILS AND NOTES

CERT.

SHEET:

OF:

JOB No.

DRG. No.

FILE:

STORM SEWER NOTES

1. STORM SEWER PIPE AND APPURTENANCES SHALL CONFORM TO CITY OF COLUMBUS STORMWATER DESIGN MANUAL, AND CITY OF COLUMBUS ORDINANCE NO. 29-2008, "STORMWATER MANAGEMENT IN THE CITY OF COLUMBUS, INDIANA", FOR DESIGN AND MATERIALS.
2. CONSTRUCTION PROCEDURES AND MATERIALS SHALL COMPLY WITH APPLICABLE SECTIONS OF THE INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION
3. PIPE AND FITTINGS USED IN STORM SEWER CONSTRUCTION SHALL BE CONCRETE PIPE (ASTM C-70), PVC PIPE (4"-24" ONLY; ASTM 3034-SDR 35, ASTM F-679, OR ASTM F-794), HOBAS PIPE (24" AND LARGER ONLY; ASTM D3262, D4161, D2412, FIBERGLASS SLEEVE COUPLINGS USING ELASTOMERIC SEALING GASKETS MADE OF EPDM COMPOUND PER ASTM D 4161, ADS N-12 (36") AND ADS N-12HC (42"-48" ONLY) DUAL WALL SINGLE MOLD HDPE PIPE WITH WATER TIGHT INTEGRAL BELL COUPLERS (AASHTO M-294, ASTM F-667). OTHER PIPE AND FITTINGS NOT SPECIFIED HEREIN MAY BE USED ONLY WHEN SPECIFICALLY AUTHORIZED IN WRITING BY THE CITY.
4. ALL STORM SEWERS SHALL BE HIGH PRESSURE WATER JET CLEANED. MAINLINE STORM SEWERS (MANHOLE TO MANHOLE) SHALL BE TELEVIEWED. LATERAL STORM SEWERS (MANHOLE TO INLET, INLET TO INLET) IN EXCESS OF 40 FT. SHALL ALSO BE TELEVIEWED. MAINLINE STORM SEWERS AND LATERAL STORM SEWERS THAT ARE 36" DIAMETER OR LESS SHALL BE SUBJECTED TO A DEFLECTION TEST USING A GO-NO-GO MANDREL (95% DIAMETER) WHEN CONSTRUCTED USING FLEXIBLE PIPE CONDUIT MATERIALS. MAINLINE STORM SEWERS AND LATERAL STORM SEWERS THAT ARE GREATER THAN 36" DIAMETER REQUIRE THIRD PARTY TESTING AND CERTIFICATION (DAIRY) OF THE BEDDING INSTALLATION WHEN CONSTRUCTED USING FLEXIBLE PIPE CONDUIT MATERIAL. CLEANING, TESTING, AND TELEVIEWING SHALL BE PERFORMED A MINIMUM OF 45 DAYS AFTER INSTALLATION, AND SHALL BE WITNESSED BY THE CITY. ALL COST OF CLEANING, TESTING, AND TELEVIEWING ARE TO BE BORNE BY THE CONTRACTOR. A COPY OF THE CCTV FILE DIGITAL FILE SHALL BE RETAINED BY THE CITY.
5. TRENCHES, WITHIN THE RIGHT OF WAY, UNDER PAVED AREAS (INCLUDING SIDEWALKS) SHALL BE BACK FILLED WITH FLOWABLE FILL PER INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS LATEST EDITION, SECTION 211 AND THE CITY STREET CUT DETAIL. FLOWABLE FILL TO EXTEND FIVE FEET BEYOND THE LIMITS OF PAVED AREA WITH A 1:1 SLOPE TO THE BOTTOM OF THE TRENCH.
6. CONFIGURATION OF INLETS IN PRIVATE PARKING OR DRIVING AREAS MAY BE VARIED TO ACCOMMODATE THE DIMENSIONS OF THE CASTINGS, PRIOR WRITTEN APPROVAL OF THE CITY IS REQUIRED.
7. 18" VERTICAL SEPARATION AND 10'-0" HORIZONTAL SEPARATION TO BE MAINTAINED BETWEEN WATER MAINS, HYDRANTS, STORM SEWERS, AND SANITARY SEWERS.
8. SEWER PERMIT AND CITY INSPECTION REQUIRED FOR ALL CONNECTIONS TO STORM SEWER SYSTEMS. SEWER PERMIT REQUIRED ON SITE DURING ANY SEWER CONSTRUCTION.
9. ALL TAPS TO CONCRETE PIPE SHALL BE MADE WITH BOOT AND SADDLE CONNECTORS AND SHALL BE CORE DRILLED ONLY.
10. ALL INLETS SHALL BE DEPRESSED 0.1 FT. BELOW PLAN GRADE.
11. ALL SEWER LINES SHALL HAVE 0.1 FT. DROP THROUGH MANHOLES.
12. CASTINGS SHALL BE CENTERED ON OPENING IN STRUCTURES.
13. MINIMUM 4" OPENING REQUIRED ON BACK OF CURB INLET CASTING.
14. TOP OF MANHOLE FRAMES TO BE SET AT PROPOSED YARD OR SIDEWALK GRADE WHEN LOCATED IN FRONT AREA OF LOT OR RIGHT OF WAY.
15. BICYCLE SAFE GRATES REQUIRED IN PAVED AREAS EXCLUDING PAVED FLOW LINES IN SWALES OR DETENTION AREAS.
16. ANIMAL GUARDS SHALL BE PERMANENTLY INSTALLED ON ALL PIPE END SECTIONS 18" OR LARGER IN DIAMETER. GUARDS SHALL HAVE A MAXIMUM CLEAR OPENING OF 4" AND BE REMOVABLE.
17. IF ANY EXISTING FIELD TILE SYSTEMS ARE ENCOUNTERED DURING THE CONSTRUCTION PROCESS THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONSTRUCTING THE TITLE TO ITS ORIGINAL CONDITION OR CONNECT IT INTO THE PROPOSED STORM DRAIN SYSTEM.
18. WHENEVER PROPRIETARY EQUIPMENT IS SPECIFIED OR "APPROVED EQUAL" IS IMPLIED ALL PROPOSALS FOR SUBSTITUTIONS SHALL BE SUBMITTED TO THE CITY IN WRITING FOR THEIR APPROVAL.
19. ALL PIPE CONNECTIONS TO STRUCTURES OR OTHER PIPES SHALL BE INSPECTED BY THE CITY PRIOR TO BACKFILL PLACEMENT.

TELEVISION INSPECTION CRITERIA
STORM SEWERS

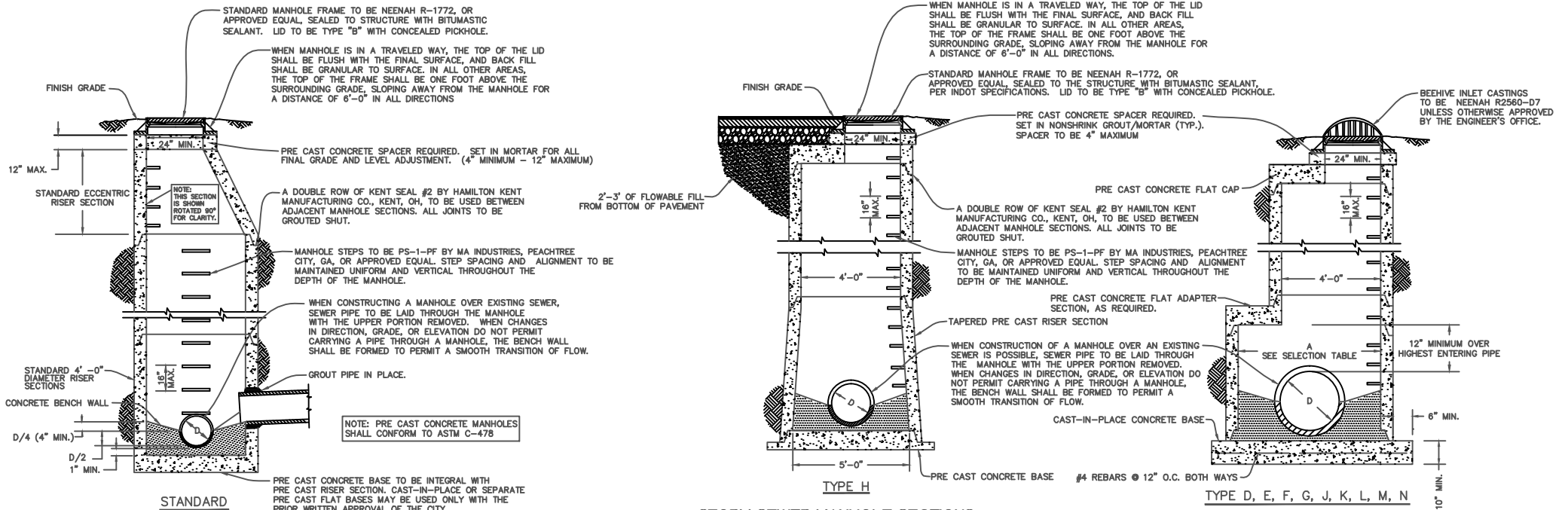
SEWERS SHALL BE "FLOODED" BEFORE TELEVISION INSPECTION. THE IMAGE SHALL BE CLEAR ENOUGH TO ENABLE THE CITY REPRESENTATIVE AND OTHERS VIEWING THE MONITOR TO EASILY EVALUATE THE INTERIOR CONDITION OF THE PIPE.

ALL UNACCEPTABLE CONDITIONS FOUND DURING TELEVISION INSPECTION MUST BE CORRECTED BY THE CONTRACTOR AND RETELEVIEWED.

UNACCEPTABLE CONDITIONS THAT ADVERSELY EFFECT THE ABILITY OF THE SYSTEM TO FUNCTION AS DESIGNED OR TO BE PROPERLY MAINTAINED AND MAY INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING.

- A. PROTRUDING TAPS
- B. CRACKED OR FAULTY PIPE
- C. MISALIGNED OR DEFORMED PIPE
- D. DEBRIS IN LINE
- E. INFILTRATION/EXFILTRATION
- F. EXCESSIVE GAPS AT JOINTS
- G. BELLIES OR SAGS WITH A DEPTH GREATER THAN OR EQUAL TO 10% (OR A MAXIMUM OF 3") OF PIPE DIAMETER AND/OR A LENGTH GREATER THAN 25 FEET

DETAILS AS TO REQUIRED CCTV EQUIPMENT AND REQUIRED TELEVISION INSPECTION REPORT ARE AVAILABLE FROM THE CITY ENGINEER'S OFFICE.

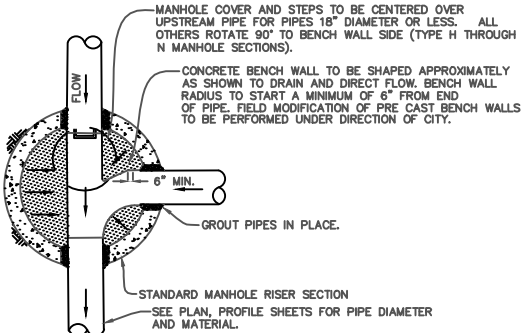


STORM SEWER MANHOLE SECTIONS

NOT TO SCALE

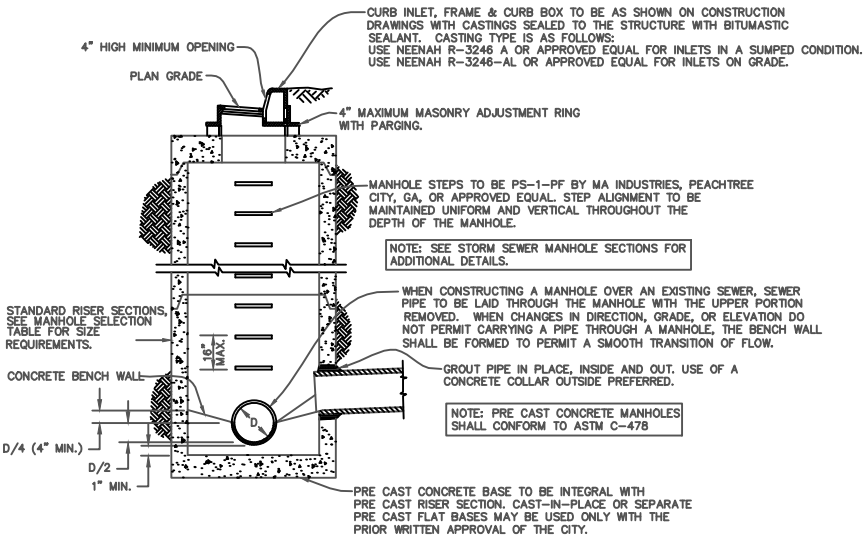
MANHOLE SELECTION TABLE - CIRCULAR					
TYPE	PIPE DIAMETER D	RISER DIAMETER A	MAXIMUM PIPE SIZE FOR MAIN LINE	MAXIMUM PIPE SIZE 90° TO MAIN LINE	
STANDARD	UP TO 24"	48"	24"	24"	
H	24"-36"	---	36"	30"	
J	24"-36"	60"	36"	30"	
K	36"-48"	72"	48"	36"	
L	48"-54"	96"	54"	48"	
M	54"-72"	102"	72"	66"	
N	72"-84"	108"	84"	72"	

MANHOLE SELECTION TABLE RECTANGULAR		
TYPE	PIPE DIAMETER	WIDTH (MIN)
STANDARD	UP TO 24"	48"
D	27"-42"	60"
E	48"-60"	78"
F	66"-84"	108"
G	90"-108"	132"



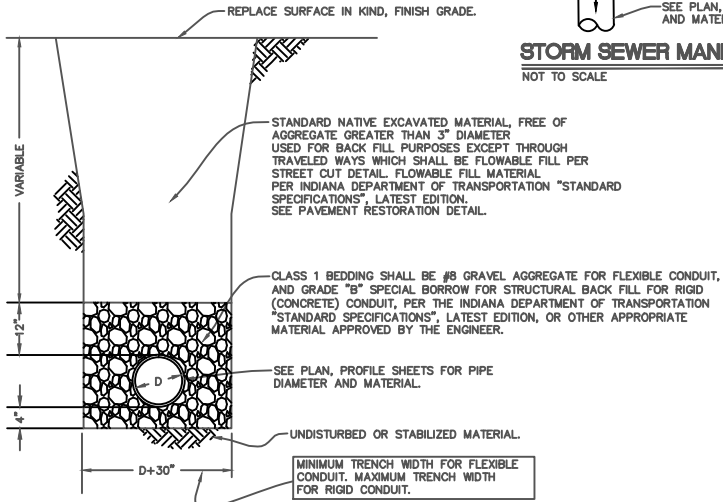
STORM SEWER MANHOLE PLAN

NOT TO SCALE



STORM SEWER MANHOLE - INLET

NOT TO SCALE



STANDARD BEDDING DETAIL

NOT TO SCALE



DWN BY: AJB

DATE: 12/23/2014

SCALE: N.T.S.

CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

STORM SEWER
TYPICAL DETAILS AND NOTES

CERT.

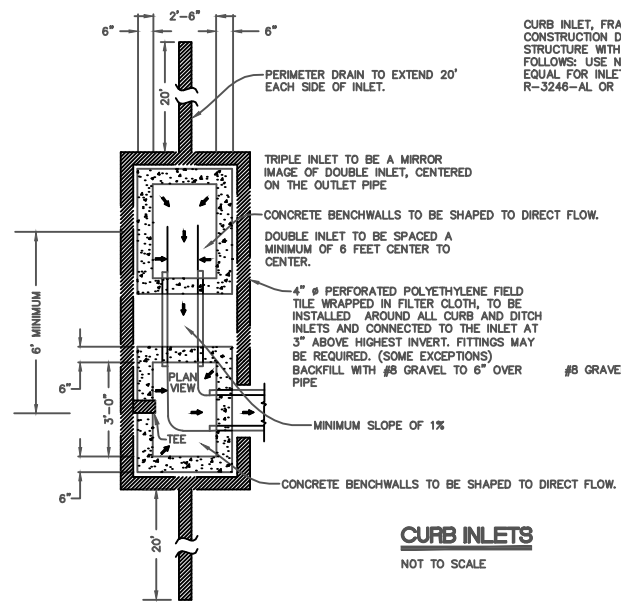
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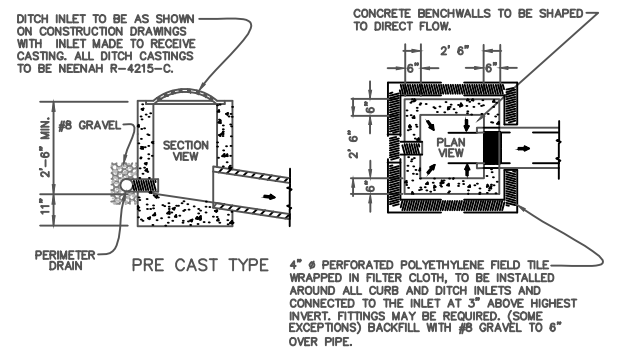
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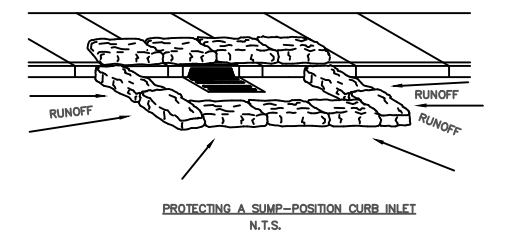
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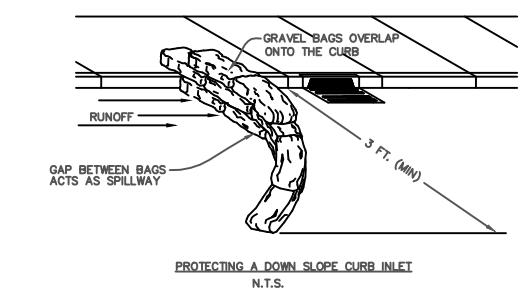
CURB INLETS
NOT TO SCALE



DITCH INLETS
NOT TO SCALE

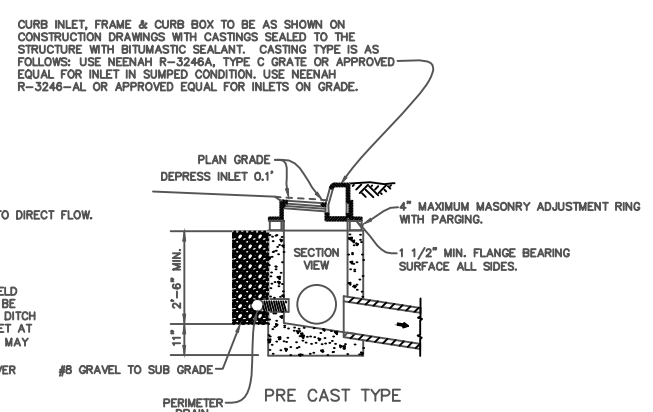


PROTECTING A SUMP-POSITION CURB INLET
N.T.S.

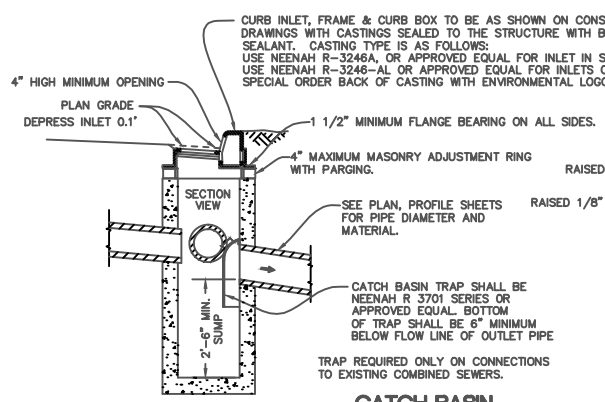


PROTECTING A DOWN SLOPE CURB INLET
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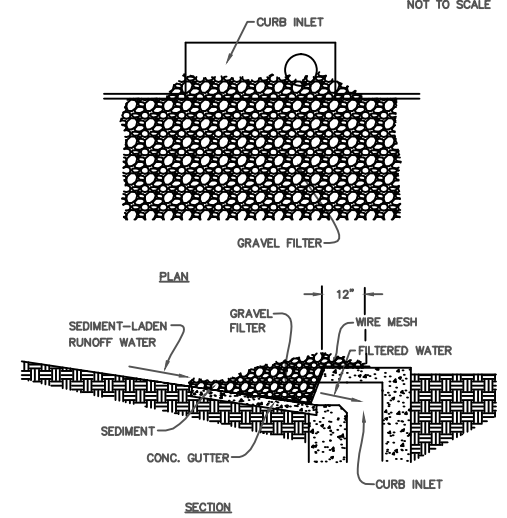
GRAVEL FILTER BAGS
CURB INLET PROTECTION



PRE CAST TYPE



CATCH BASIN
NOT TO SCALE



GRAVEL FILTER
CURB INLET PROTECTION

EROSION CONTROL - SEEDING RECOMMENDATIONS

THIS TABLE PROVIDES SEVERAL SEEDING OPTIONS. ADDITIONAL SEED SPECIES AND MIXTURES ARE AVAILABLE COMMERCIALY. WHEN SELECTING A MIXTURE, CONSIDER SITE CONDITIONS, INCLUDING SOIL PROPERTIES (E.G. SOIL PH AND DRAINAGE), SLOPE ASPECT AND THE TOLERANCE OF EACH SPECIES TO SHADE AND DROUGHT.

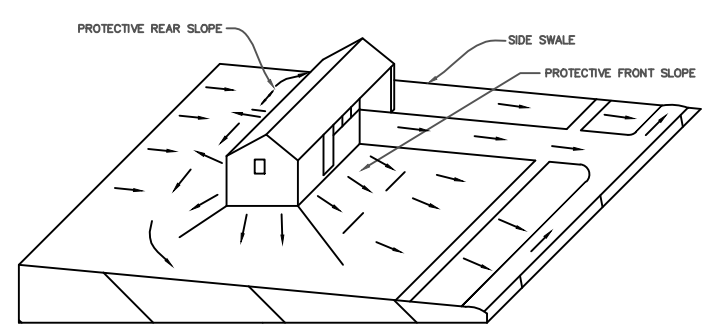
SEED SPECIES AND MIXTURES	RATE PER ACRE	OPTIMUM SOIL PH
OPEN AND DISTURBED AREAS (REMAINING IDLE MORE THAN 1 YR.)		
1. PERENNIAL RYEGRASS	35-50 LBS.	5.6 TO 7.0
+ WHITE OR LADINO CLOVER	1-2 LBS.	
2. KENTUCKY BLUEGRASS	20 LBS.	5.5 TO 7.5
+ SMOOTH BROMEGRASS	10 LBS.	
+ SWITCHGRASS	3 LBS.	
+ TIMOTHY	4 LBS.	
+ PERENNIAL RYEGRASS	1-2 LBS.	
+ WHITE OR LADINO CLOVER	1-2 LBS.	
3. PERENNIAL RYEGRASS	15-30 LBS.	5.6 TO 7.0
+ TALL FESCUE	15-30 LBS.	
+ TALL FESCUE	35-50 LBS.	5.5 TO 7.5
+ WHITE OR LADINO CLOVER	1-2 LBS.	

* FOR BEST RESULTS: (A) LEGUME SEED SHOULD BE INOCULATED; (B) SEEDING MIXTURES CONTAINING LEGUMES SHOULD PREFERABLY BE SPRING-SEEDED ALTHOUGH THE GRASS MAY BE FALL-SEEDED AND THE LEGUME FROST-SEEDED (PRACTICE 3.13); AND (C) IF LEGUMES ARE FALL-SEEDED, DO SO EARLY IN FALL.

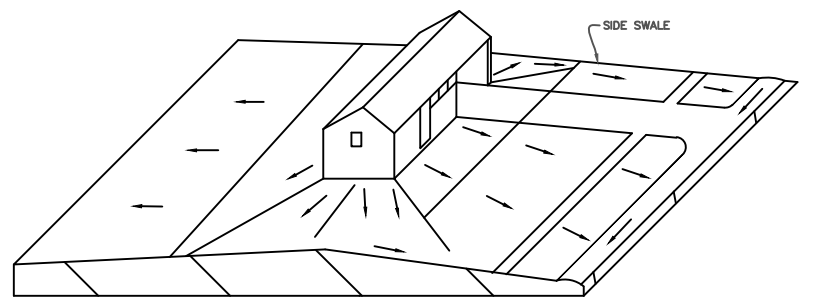
FERTILIZER:
ACCORDING TO SOIL TEST OR USE 600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

MULCH:
MULCH SHALL BE STRAW OR HAY. MATERIAL SHOULD BE DRY, UNCHOPPED FREE OF UNDESIRABLE SEEDS AND SPREAD BY HAND OR MACHINE. WOOD FIBER OR CELLULOSE MAY BE USED AND APPLIED WITH A HYDROMULCHER AND USE OF A TACKING AGENT.

STEEP BANKS AND CUTS, LOW MAINTENANCE AREAS (NOT MOWED) AND CHANNELS AND AREAS OF CONCENTRATED FLOW REQUIRE ALTERNATE SEEDING AND MULCH ANCHORING METHODS. REFER TO INDIANA HANDBOOK FOR EROSION CONTROL IN DEVELOPING AREAS.

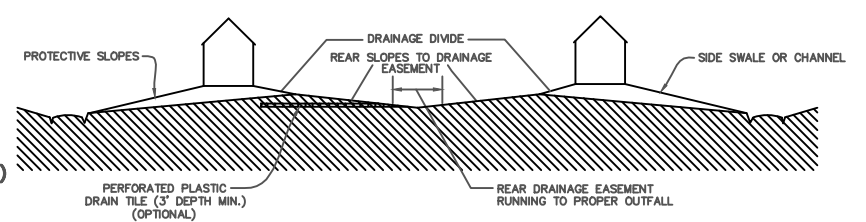


GRADING METHOD FOR LOT WHERE SLOPE IS FROM REAR TO FRONT LOT. DRAINAGE SWALES ARE LOCATED AT REAR AND SIDES OF DWELLING.



GRADING METHOD FOR LOT WHERE DWELLING IS LOCATED ON A RIDGE. DRAINAGE SWALES ARE LOCATED AT SIDE YARDS IN THE AREA OF POSITIVE SLOPES.

LOT DRAINAGE DETAIL (TYPICAL)
NOT TO SCALE

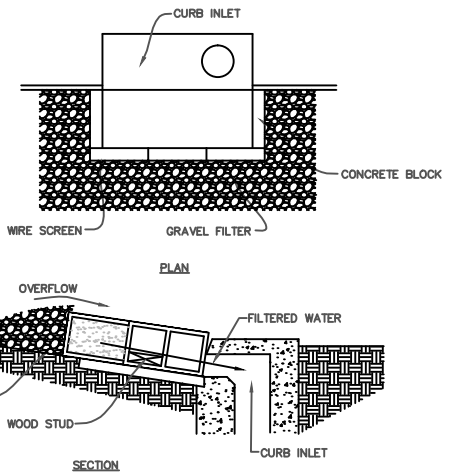
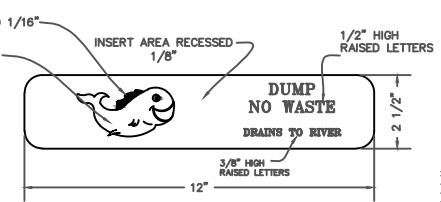


BACK TO BACK LOT SECTION DETAIL (TYPICAL)
NOT TO SCALE

GENERAL NOTES

- WHENEVER PROPRIETARY EQUIPMENT IS SPECIFIED, "OR APPROVED EQUAL" IS IMPLIED. ALL PROPOSALS FOR SUBSTITUTION SHALL BE SUBMITTED TO THE CITY IN WRITING FOR THEIR APPROVAL.
- PRIOR WRITTEN APPROVAL OF ENGINEER'S OFFICE FOR USE OF CAST IN PLACE OR MASONRY STRUCTURES.

LOGO DETAIL (TOP OF BOX)
NOT TO SCALE



BLOCK AND GRAVEL
CURB INLET PROTECTION

SHEET TITLE:	STORM SEWER STRUCTURE, DRAINAGE AND EROSION CONTROL TYPICAL DETAILS AND NOTES		CERT.	SHEET:	OF:
				JOB No.	DRG. No.
			FILE:		

CITY OF COLUMBUS			DWN BY: AJB
REVISIONS	DATE	BY	DATE: 12/23/2014
			SCALE: N.T.S.

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123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

CONSTRUCTION SEQUENCE FOR BUILDING SITE EROSION CONTROL PRACTICE

STEP 1. EVALUATE THE SITE
BEFORE CONSTRUCTION, EVALUATE THE ENTIRE SITE, MARKING FOR PROTECTION ANY IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, UNIQUE AREAS TO BE PRESERVED, ON-SITE SEPTIC SYSTEM ABSORPTION FIELDS, AND VEGETATION SUITABLE FOR FILTER STRIPS, ESPECIALLY IN PERIMETER AREAS.

IDENTIFY VEGETATION TO BE SAVED
*SELECT AND IDENTIFY THE TREES, SHRUBS, AND OTHER VEGETATION THAT YOU WANT TO SAVE (SEE VEGETATIVE FILTER STRIPS UNDER STEP 2 BELOW).

PROTECT TREES AND SENSITIVE AREAS
*TO PREVENT ROOT DAMAGE, DO NOT GRADE, BURN, PLACE SOIL PILES, OR PARK VEHICLES NEAR TREES OR IN AREAS MARKED FOR PRESERVATION.

*PLACE PLASTIC MESH OR SNOW FENCE BARRIERS AROUND THE TREES DRIP LINE TO PROTECT THE AREA BELOW THEIR BRANCHES.

* PLACE A PHYSICAL BARRIER, SUCH AS PLASTIC FENCING, AROUND THE AREA DESIGNATED FOR A SEPTIC SYSTEM ABSORPTION FIELD (IF APPLICABLE).

STEP 2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS
IDENTIFY THE AREAS WHERE SEDIMENT-LADEN RUNOFF COULD LEAVE THE CONSTRUCTION SITE, AND INSTALL PERIMETER CONTROLS TO MINIMIZE THE POTENTIAL FOR OFF-SITE SEDIMENTATION. IT'S IMPORTANT THAT PERIMETER CONTROLS ARE IN PLACE BEFORE ANY OTHER EARTH-MOVING ACTIVITIES BEGIN.

PROTECT DOWN-SLOPE AREAS WITH VEGETATIVE FILTER STRIPS
* ON SLOPES OF LESS THAN 6 PERCENT, PRESERVE A 20 TO 30 FOOT WIDE VEGETATIVE BUFFER STRIP AROUND THE PERIMETER OF THE PROPERTY AND USE IT AS A FILTER STRIP FOR TRAPPING SEDIMENT.

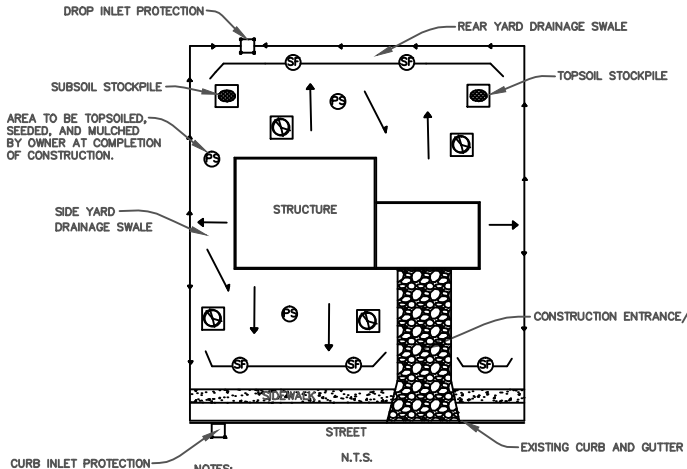
* DO NOT MOW FILTER STRIP VEGETATION SHORTER THAN 4 INCHES

WITH SILT FENCE
* USE SILT FENCING ALONG THE PERIMETER OF THE LOT'S DOWN SLOPE SIDE(S) TO TRAP SEDIMENT (SEE SILT FENCE DETAIL)

INSTALL GRAVEL DRIVE
* RESTRICT ALL LOT ACCESS TO THIS DRIVE TO PREVENT VEHICLES FROM TRACKING MUD ONTO ROADWAYS (SEE CONSTRUCTION ENTRANCE DETAIL)

PROTECT STORM SEWER INLETS
* PROTECT NEARBY STORM SEWER CURB INLETS WITH STONE-FILLED OR GRAVEL-FILLED GEOTEXTILE BAGS (SEE CURB INLET PROTECTION DETAIL) OR EQUIVALENT MEASURES BEFORE DISTURBING SOIL.

* PROTECT ON-SITE STORM SEWER DROP INLETS WITH SILT FENCE MATERIAL (SEE CURB INLET PROTECTION DETAIL), STRAW BALES, OR EQUIVALENT MEASURES BEFORE DISTURBING SOIL.



NOTES:
1. EROSION/SEDIMENT CONTROL MEASURES MUST BE FUNCTIONAL AND BE MAINTAINED THROUGHOUT CONSTRUCTION.
2. MAINTAIN POSITIVE DRAINAGE AWAY FROM THE STRUCTURE(S).

SAMPLE EROSION/SEDIMENT CONTROL PRACTICE PLAN
TYPICAL STRUCTURE UNDER CONSTRUCTION

STEP 3. PREPARE THE SITE FOR CONSTRUCTION
PREPARE THE SITE FOR CONSTRUCTION AND FOR INSTALLATION OF UTILITIES. MAKE SURE ALL CONTRACTORS (ESPECIALLY THE EXCAVATING CONTRACTOR) ARE AWARE OF AREAS TO BE PROTECTED.

SALVAGE AND STOCKPILE TOPSOIL/SUBSOIL
* REMOVE TOPSOIL (TYPICALLY THE UPPER 4 TO 6 INCHES OF SOIL MATERIAL) AND STOCKPILE.

* REMOVE SUBSOIL AND STOCKPILE SEPARATELY FROM THE TOPSOIL.

* LOCATE THE STOCKPILES AWAY FROM ANY DOWN SLOPE STREET, DRIVEWAY, STREAM, LAKE WETLAND, DITCH, OR DRAINAGEWAY.

* IMMEDIATELY AFTER STOCKPILING TEMPORARY-SEED THE STOCKPILES WITH ANNUAL RYE OR WINTER WHEAT AND/OR PLACE SEDIMENT BARRIERS AROUND THE PERIMETER OF THE PILES

STEP 4. BUILD THE STRUCTURE(S) AND INSTALL THE UTILITIES
CONSTRUCT THE STRUCTURE AND INSTALL THE UTILITIES; ALSO INSTALL THE SEWAGE DISPOSAL SYSTEM AND DRILL THE WATER WELL (IF APPLICABLE); THEN CONSIDER THE FOLLOWING:

INSTALL DOWN SPOUT EXTENDERS
*ALTHOUGH NOT REQUIRED, DOWN SPOUT EXTENDERS ARE HIGHLY RECOMMENDED AS A MEANS OF PREVENTING LOT EROSION FROM ROOF RUNOFF.

* ADD THE EXTENDERS AS SOON AS THE GUTTERS AND DOWN SPOUTS ARE INSTALLED (SEE TEMPORARY DOWN SPOUT EXTENDERS DETAIL)

* BE SURE THE EXTENDERS HAVE A STABLE OUTLET SUCH AS THE STREET, SIDEWALK, OR A WELL VEGETATED AREA

STEP 5. MAINTAIN THE CONTROL PRACTICES
MAINTAIN ALL EROSION AND SEDIMENT CONTROL PRACTICES UNTIL CONSTRUCTION IS COMPLETED AND THE LOT IS STABILIZED.

* INSPECT THE CONTROL PRACTICES A MINIMUM OF TWICE A WEEK AND AFTER EACH STORM EVENT, MAKING ANY NEEDED REPAIRS IMMEDIATELY.

* TOWARD THE END OF EACH WORKDAY SWEEP OR SCRAPE UP ANY SOIL TRACKED ONTO ROADWAYS. DO NOT FLUSH AREAS WITH WATER.

* BY THE END OF THE NEXT WORKDAY AFTER A STORM EVENT, CLEAN UP ANY SOIL WASHED OFF-SITE.

STEP 6. REVEGETATE THE BUILDING SITE
IMMEDIATELY AFTER ALL OUTSIDE CONSTRUCTION ACTIVITIES ARE COMPLETED, STABILIZE THE LOT WITH SOD, SEED, AND/OR MULCH.

REDISTRIBUTE THE STOCKPILED SUBSOIL AND TOPSOIL
* SPREAD THE STOCKPILED SUBSOIL TO ROUGH GRADE.

* SPREAD THE STOCKPILED TOPSOIL TO A DEPTH OF 4 TO 6 INCHES OVER ROUGH-GRADED AREAS.

* FERTILIZE AND LIME ACCORDING TO SOIL TEST RESULTS OR RECOMMENDATIONS OF A SEED SUPPLIER OR A PROFESSIONAL LANDSCAPING CONTRACTOR.

SEED OR SOD BARE AREAS
* CONTACT LOCAL SEED SUPPLIES OR PROFESSIONAL LANDSCAPING CONTRACTORS FOR RECOMMENDED SEEDING MIXTURES AND RATES.

* FOLLOW RECOMMENDATIONS OF A PROFESSIONAL LANDSCAPING CONTRACTOR FOR INSTALLATION OF SOD.

* WATER NEWLY SEEDDED/SODDED AREAS EVERY DAY OR TWO TO KEEP THE SOIL MOIST. LESS WATERING IS NEEDED ONCE GRASS IS 2 INCHES TALL.

MULCH NEWLY SEEDDED AREAS
* SPREAD STRAW MULCH ON NEWLY SEEDDED AREAS, USING 1 1/2 TO 2 BALES OF STRAW PER 1,000 SQUARE FEET.

* ON FLAT OR GENTLY SLOPING LAND, ANCHOR THE MULCH BY CRIMPING IT 2 TO 4 INCHES INTO THE SOIL. ON STEEP SLOPES, ANCHOR THE MULCH WITH NETTING OR TACKIFIERS. AN ALTERNATIVE TO ANCHORED MULCH WOULD BE THE USE OF EROSION CONTROL BLANKETS.

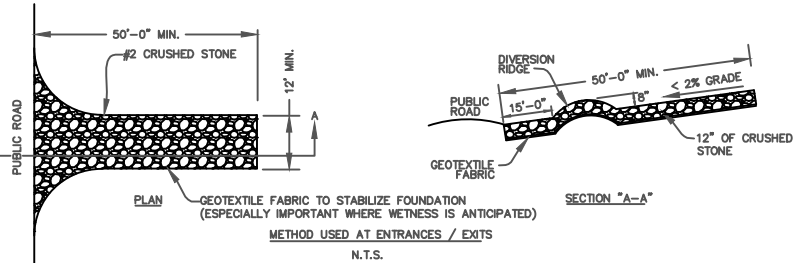
STEP 7. REMOVE REMAINING TEMPORARY CONTROL MEASURES
ONCE THE SOD AND/OR VEGETATION IS WELL ESTABLISHED, REMOVE ANY REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES, SUCH AS:

* DOWN SPOUTS EXTENDERS (OR SHORTEN TO OUTLET ONTO THE VEGETATED AREAS, ALLOWING FOR MAXIMUM INFILTRATION.

* STORM SEWER INLET PROTECTION MEASURES.

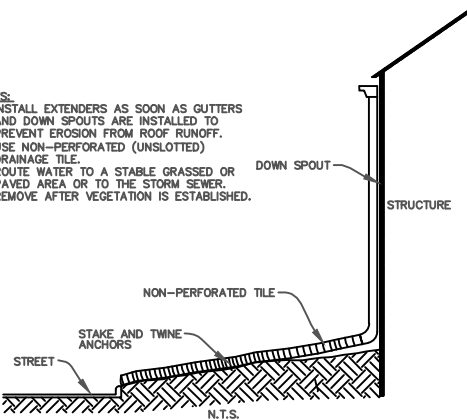
EROSION CONTROL NOTES:

- CONTRACTOR SHALL INSTALL ALL REQUIRED SILT FENCES, SILT TRAPS, TREE PROTECTION AND INLET PROTECTION FOR EXISTING INLETS PRIOR TO THE START OF ANY EARTH MOVING OR STRIPPING.
- CONTRACTOR SHALL INSTALL A GRAVEL CONSTRUCTION ENTRANCE OR SOME OTHER DEVICE PRIOR TO THE START OF EARTHWORK AS NECESSARY TO PREVENT SOIL FROM BEING TRACKED OR WASHED INTO EXISTING ROADWAYS.
- LAND ALTERATIONS WHICH STRIP THE LAND OF VEGETATION, INCLUDING REGRADING, SHALL BE DONE IN A WAY THAT WILL MINIMIZE EROSION. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED. AS GRADING IS DONE, INSTALL SILT TRAPS, SILT FENCES, SLOPE DRAINS, TEMPORARY DIVERSIONS AND OTHER RUNOFF CONTROL MEASURES AT APPROPRIATE LOCATIONS TO KEEP SEDIMENT CONTAINED ON SITE.
- ALL DISTURBED AREAS SHALL BE SEEDDED AND STRAW MULCHED AS SHOWN ON THE PLANS IMMEDIATELY AFTER COMPLETION OF GROUND DISTURBING ACTIVITY, FOR EACH PHASE AS THE DIFFERENT PHASES OF THE SITE ARE CONSTRUCTED.
- PERMANENT AND FINAL VEGETATION OR STRUCTURAL EROSION CONTROL DEVICES SHALL BE INSTALLED AS SOON AS PRACTICAL.
- THE DURATION OF TIME WHICH AN AREA REMAINS EXPOSED SHALL BE KEPT TO A PRACTICAL MINIMUM DEPENDING UPON THE WEATHER. IF CONSTRUCTION ACTIVITY IS TO CEASE FOR MORE THAN TWO WEEKS, THE DISTURBED AREAS SHALL BE TEMPORARILY SEEDDED.
- ALL STORM SEWER INLET PROTECTION DEVICES SHALL BE PUT IN PLACE AT THE TIME EACH INLET IS CONSTRUCTED.
- CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES AND DEVICES DURING CONSTRUCTION AND UNTIL SILTATION OF THE STREETS AND STORM SEWERS WILL NO LONGER OCCUR.
- ONCE ON-SITE EROSION AND SILTATION OF THE STREETS AND STORM SEWERS WILL NO LONGER OCCUR, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE TEMPORARY EROSION CONTROL DEVICES.
- THESE GENERAL PROCEDURES MAY NOT COVER ALL SITUATIONS. REFER TO EROSION CONTROL PLANS FOR SPECIFIC NOTES AND ADDITIONAL DETAILS.
- EROSION CONTROL SHALL COMPLY WITH INDIANA 327 IAC AND RULE #5, AND THE INDIANA STORM WATER QUALITY MANUAL.
- THE CITY ENGINEER HAS THE AUTHORITY TO REQUEST ADDITIONAL EROSION CONTROL MEASURES OR AMEND EROSION CONTROL PLANS SUBJECT TO ACTUAL SITE CONDITIONS.
- THE CONTRACTOR MAY SUBSTITUTE DIFFERENT EROSION CONTROL DEVICES FOR THOSE SHOWN ON THE DRAWINGS SO LONG AS THE SUBSTITUTED DEVICES PERFORMS AS REQUIRED BY INDIANA 327 IAC AND "RULE 5".
- THE CONTRACTOR IS TO INSTALL, MONITOR AND MAINTAIN ALL REQUIRED EROSION CONTROL DEVICES IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE "INDIANA STORM WATER QUALITY MANUAL" LATEST EDITION, WHICH IS HEREBY INCORPORATED INTO THESE STANDARDS BY REFERENCE AND MADE A PART THEREOF.



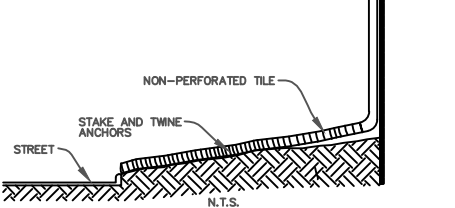
- NOTES:**
- PLACE 6 INCHES OF COARSE AGGREGATE (INDOT CA NO.2) OVER A STABLE SUBGRADE.
 - CONSTRUCT THE DRIVE AT LEAST 12 FEET WIDE AND 50 FEET LONG OR THE DISTANCE TO THE FOUNDATION.
 - ADD STONE AS NEEDED TO MAINTAIN 6 INCHES OF CLEAN DEPTH.
 - TO IMPROVE STABILITY OR IF WET CONDITIONS ARE ANTICIPATED, PLACE GEOTEXTILE FABRIC ON THE GRADED FOUNDATION.

CONSTRUCTION GRAVEL ENTRANCE



TEMPORARY DOWN SPOUT EXTENDERS

- NOTES:**
- INSTALL EXTENDERS AS SOON AS GUTTERS AND DOWN SPOUTS ARE INSTALLED TO PREVENT EROSION FROM ROOF RUNOFF.
 - USE NON-PERFORATED (UNSLOTTED) DRAINAGE TILE.
 - ROUTE WATER TO A STABLE GRASSSED OR PAVED AREA OR TO THE STORM SEWER.
 - REMOVE AFTER VEGETATION IS ESTABLISHED.



DWN BY: AJB

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CITY OF COLUMBUS
OFFICE OF CITY ENGINEER
123 WASHINGTON STREET
COLUMBUS, INDIANA 47201

SHEET TITLE:

EROSION CONTROL
TYPICAL DETAILS AND NOTES

CERT.

SHEET:

OF:

JOB No.

DRG. No.

FILE: